

Health Care Delivery

Physicians as Patients—The Use of Obstetric Technology in Physician Families

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Birth records of King County, Washington, for 1980 through 1982 were reviewed to study the use of obstetric technology by physician and nonphysician families. The sample of 524 births to physician families was compared with 657 births to nonphysician families randomly selected from upper income census tracts. Though similar in demographic and medical characteristics and pregnancy outcomes, the two groups differed greatly in use of amniocentesis and cesarean section. Physician families used amniocentesis 1.65 times more often than nonphysician families and women physicians were 3 times more likely to have the procedure (relative risk [RR] 3.09). For female physicians 30 to 40 years old, the RR was 5.54. Similarly, physician rates for primary cesarean section were 1.56 times higher and rates for women physicians were twice as high as for controls (RR 2.14). This study suggests higher utilization rates among physicians for some procedures. These findings may foreshadow increases in utilization in the general population.

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It has been estimated that physicians control up to 80% of personal health care expenditures.¹ By recommendations in clinical practice, physicians shape patterns of use of medical technologies that are often costly and potentially morbid.² Such recommendations necessarily depend on the physicians' medical beliefs and should be mirrored, therefore, in their own health care behavior.

Physicians as a group, in fact, epitomize informed consumers in the use of medical technology. Practical experience with various medical interventions coupled with an understanding of the costs and benefits of specific technologies should enable the physician to act in a rational and judicious manner. Relatively few studies, however, have investigated the manner in which physicians themselves use medical care. Of the surveys found in the literature, most show physicians and their families to be relatively high^{3,4} but erratic users of medical intervention.⁵

This study was designed to examine the personal use by physicians of obstetric technology. This field is of interest for several reasons. Technology in this area is growing rapidly, with both new techniques available and a broadening of the indications for their use. Second, the birth of a child is an event of major importance, with much consideration given by prospective parents—physicians or not—to the use of medical intervention. Finally, changes in either health care policy or patient-generated demand with respect to the use of elective obstetric procedures could have a significant effect on health care costs.^{6,7}

Materials and Methods

Birth records for Washington State have been computerized since 1980 and include detailed occupational codes for

both parents. Birth data for King County (Seattle and environs) were reviewed. All births to physicians or their spouses for 1980 to 1982 were identified by the occupation coding on the birth records ($n = 587$). A comparison sample of 906 King County births to nonphysician families was randomly selected. In comparing the demographic characteristics of the two groups, a statistically significant difference in median income by census tract between the two groups was found. Income is not recorded on these records but does parallel the median income of census tract of residence. Therefore, to study utilization patterns with minimal impact by issues of economic access, all births from census tracts in which the median family income was below \$10,000 or not specified were excluded from analysis.

The study considered 524 physician families (90 of which had a physician as mother) and 657 nonphysician families. There was a significant difference in maternal age between the two groups. All analyses, therefore, were stratified by maternal age using five-year intervals, and a Mantel-Haenszel (odds ratio) summary statistic was calculated as an estimate of the relative risk.⁸ The two groups were then compared with respect to numerous other maternal risk factors and significant fetal outcomes.

Rates for first and second trimester (midtrimester) amniocentesis were analyzed together since most indications for amniocentesis are the same in this time span. Advanced maternal age (35 years old or older), previous birth with chromosomal abnormality or neural tube defect or a family history of a dominant Mendelian disorder are some of the accepted indications for midtrimester amniocentesis. Third trimester amniocentesis, which is usually indicated for complications of pregnancy, was analyzed separately.

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Results

Population Characteristics

Table 1 illustrates the demographic characteristics of the physician and nonphysician families. Maternal age for physician births was found to be higher than that for the nonphysician population. The mean maternal age for nonphysician families was 26.8 years and for physician families 31.3 years ($P = .001$). The mean age for female physicians was 33.1 years.

In contrast, the two groups were quite similar when compared for maternal health problems such as hypertension and diabetes mellitus, number of previous pregnancies and number of prenatal visits. Likewise, the overall incidence of complications of pregnancy was similar (7.2% for nonphysicians versus 5.9% for physicians).

TABLE 1.—Characteristics of Physician and Nonphysician Families

Maternal and Pregnancy Characteristics	Nonphysician Families	Physician Families	P Value
Mean maternal age, years . . .	26.8* (5.04)†	31.3 (3.4)	.001
Number of prior pregnancies	1.4 (3.66)	1.2 (1.2)	> .05
Number of prenatal visits . . .	11.9 (6.64)	12.1 (8.15)	> .05
Systemic illness, %	2.1	2.2	> .05
Complications of pregnancy, %	7.2	5.9	> .05

*Mean.

†Standard deviation.

TABLE 2.—Characteristics of Labor and Neonate

Characteristics	Nonphysician Families	Physician Families	P Value
Labor			
Spontaneous delivery, % . .	59.6	57.8	> .05
Induced labor, %	1.9	1.7	> .05
Prolonged labor, %	2.1	2.9	> .05
Complications of labor, % .	12.5	16.2	> .05
Neonate			
Apgar 5 minutes	8.9 (0.83)	8.9 (.76)	> .05
Mean birth weight, grams .	3,440.0 (577)	3,483.0 (550)	> .05
Absence of birth trauma, %	4.6	4.2	> .05

*Mean.

†Standard deviation.

TABLE 3.—Use of Obstetric Technology in Physician-Nonphysician Families—Age-Adjusted Stratified Analysis

Obstetric Technology	Relative Risk	P Value
Amniocentesis		
All physician families	1.65	> .046
All female physicians	3.09	> .0001
Female physicians aged 30-34 years	5.54	> .0023
Primary Cesarean Section		
All physician families	1.56	> .043
All female physicians	2.14	> .003
Female physicians aged 25-29 years	4.83	> .009
Low Forceps		
All physician families	0.60	> .0005

Neonatal outcomes and characteristics of labor (Table 2) also showed the two groups to be quite similar. Mean birth weights for the two groups differed by only 43 grams. Apgar scores at one minute and five minutes and the incidence of birth trauma were almost identical in the two groups. Comparison of the incidence of induced labor, prolonged labor and spontaneous delivery showed no statistical difference between the two groups. Therefore, we concluded that physician families were comparable to nonphysician families in maternal characteristics before and during pregnancy and characteristics and measures of neonatal outcomes.

The Use of Obstetric Technology

Midtrimester amniocentesis. Physician families used midtrimester amniocentesis more often and at an earlier age than did their nonphysician counterparts. The overall incidence of midtrimester amniocentesis in the physician families was 10.1% compared with 2.5% in nonphysician families ($P = .0001$). Stratified analysis (Table 3) showed an overall age-adjusted relative risk (RR) for midtrimester amniocentesis of 1.65 ($P = .046$) for physician families, with amniocentesis rates statistically higher for all age strata when compared with nonphysician families. Separate analysis of female physicians showed an age-adjusted relative risk of 3.09 ($P = .0001$). In the 30- to 34-year-old group, women physicians had midtrimester amniocentesis at 5.54 times the rate of their nonphysician counterparts ($P = .002$). By contrast, there was little observed difference in third trimester amniocentesis rates among the three groups.

Primary cesarean section. Similar findings were obtained in the analysis of primary cesarean section. Despite the lack of evidence of antecedent problems or mean birth-weight differences between the two groups, physician families again used this procedure more and at a younger maternal age than the nonphysician group, with an age-adjusted relative risk of 1.56 ($P = .043$). On an age-adjusted basis, women physicians used cesarean section more than twice as often as the comparison group (RR 2.14 [$P = .003$]). There was little difference found in the use of repeat cesarean section between physician and nonphysician families; however, sample size was quite small.

Other obstetric technologies. Differences in the use of low forceps and alternate birthing centers also appeared in the analysis. Physicians were almost half as likely to have low forceps used during delivery as their nonphysician counterparts (RR .60 [$P = .05$]). Finally, in the three years of our study only 1.1% of physician births occurred in nonhospital locations such as home or birthing centers while 5.7% of nonphysician families used these alternatives.

Discussion and Conclusions

Pronounced differences in utilization of obstetrical technology between physician and nonphysician families were shown in this study. Multiple comparisons of both prenatal risk factors and birth outcome did not identify differences between physician and nonphysician families that would explain these differences in behavior.

Other studies have also found differences in the manner in which physicians and their families use medical services. A study of radiologists and their families showed their use of diagnostic x-ray procedures to be much more frequent than that of a comparison group of nonradiologist physicians.⁴ In contrast, a survey of physicians' personal use of preventive

screening practices found their behavior to be erratic with both underuse and overuse of some services.⁵

In Bunker and Brown's study,³ surgical rates for a variety of common operations were ascertained for physicians, attorneys, businessmen and ministers and their spouses. Although the authors' hypothesis was that physicians would have fewer surgical procedures than lay people, this was not confirmed by the data. Most procedures were carried out with equal frequency in all groups; however, physicians and their spouses more often had undergone thyroidectomy and appendectomy.

Furthermore, women physicians and attorneys had significantly lower rates of hysterectomy than the spouses of male physicians or attorneys. This suggests that surgical rates among physicians do not simply reflect a general disposition to utilize these services or not but that specific choices are being made. Our study supports such a thesis.

We feel these observations reflect the characteristics of physicians and their unique medical knowledge. In contrast to most expectant parents, many physicians have seen suboptimal obstetric outcomes during their training. Presumably, they have confidence in medical technology and it is plausible that they choose to use this technology at such a personally critical juncture. Other explanations, however, are possible. Unknown, and of great importance, is whether physicians are generally treated by specialists who use these technologies at higher rates. Such selection might explain these findings equally well.

Since physicians guide their patients' behavior, health planners should note the manner in which physicians use health care services. As the population becomes more sophisticated medically, one can speculate that the behavior of the

general population will increasingly mirror that of physicians.

This preliminary study is limited in several respects. The study groups are small and represent only one urban county in Washington State. Confounding by socioeconomic status may still be present since specific information on income and other socioeconomic data is not indicated on the record. Physicians in different specialties may make notably different medical care choices. Utilization trends may also be changing over time. Finally, the beliefs of neither the providers nor the recipients of care, which are central to understanding behavior, can be obtained from birth records. Nonetheless, the choices made for obstetric care, especially by women physicians, are striking. If similar changes occur in the general population, the consequences of these utilization trends may be substantial in both personnel and equipment demands. Health care planners will be obliged to address these issues in the future.

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